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PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION

Improvements in and relating to Umbrellas, Parasols and the like

I, WILLIAM BARCROFT, of "Southolme," Dunham Massey, Cheshire, a subject of the King of Great Britain and Ireland, do hereby declare the nature of this invention to be as follows:—

This invention relates to umbrellas, parasols and like sunshades, and has for its objects:—

(a) so constructing an umbrella entirely or principally or partly of india-rubber and of fitting thereto an inlet valve or air-inlet and an air-inflator or air-pump that, by the use of the inflator or pump or by lung expulsion air will fill or flow into those of its parts which are inflatable and which may consist of tubing or piping and/or other kinds or shapes of air-containers or air-receptacles, and, as the air is pumped or blown into them, so produce an action not unlike in appearance and/or utility that of the opening and/or outwardly extending of the steel ribs or rods or other framework of an ordinary silk umbrella (the ribs or rods of which are so displaced), and, when fully inflated, a shape in the india-rubber umbrella, which, as a whole, conforms with or is not unlike that of a steel framed silk covered umbrella; and so constructing an umbrella of this kind that it can be easily deflated by outlet valve or air-outlet or air-outlets;

(b) so constructing a parasol or other kind of like sunshade that its upper framework and means of being held by the hand consist, or that part of a parasol or sunshade which ordinarily or usually determines its shape on being opened consists, of inflatable rubber tubing or piping which forms, as in (a), hollow inflatable ribs or rods and/or other kinds or shapes of inflatable air-receptacles, and so that there would be embodied therein or attached thereto means of or for inflation consisting of an air inlet or an inlet valve fitted with an air pump or air-inflator, and means for or of deflating by outlet valve or air-outlet or air-outlets; and so that the inflatable rubber tubing or piping and/or other kinds or shapes of inflatable air receptacles would be an effective substitute or a substitute for the steel or other

metallic or other kind of framework of a parasol or sunshade; and also the following additional objects:—

(c) The production of a collapsible umbrella, parasol or sunshade which may be packed in a small space; and which may be carried, when not in use, in pocket or hand-bag, enclosed in wrapper or separate container or otherwise;

(d) The production of an umbrella, parasol or sunshade which will not be easily blown inside out; or, if blown inside out, may again be immediately or almost immediately used, or necessitate only a slight repair or adjustment; or be replaced entirely at lesser expense;

(e) A reduction in the weight of umbrella, parasol or sunshade;

(f) A better means of protection from heavy or continuous rainfall, without the inconvenience and expense of re-proofing or recovering.

(g) A means of avoiding, to some extent, or wholly, the inconvenience of temporarily disposing of, or the carrying as at present of, a wet umbrella; and an improved covering in the sense of a better drying medium;

(h) A means of avoiding holes in covers caused by steel or other metallic or rigid ribs or other parts of similar framework in or by their opening and closing movements;

(i) The supplying of a suitable medium for the fastening thereto of oil-silk or any other transparent or semi-transparent fabric or material, for the purpose of enabling visibility through it at any angle at which the umbrella, parasol or sunshade could be held as a cover, which could not be used as a covering for a steel or metallic framed umbrella, parasol or sunshade or which could not be so conveniently or suitably so used;

(j) The production of a simple and inexpensive form of protection from rain for the use of the young or the very old.

The present invention consists of the principle of introducing or embodying inflatable and/or inflated india-rubber tubes, pipes or air-conduits which are straight and/or curved or arc shaped

and/or other kinds of inflatable air-containers or air-receptacles into or in the construction, as herein described, of an umbrella, parasol or sunshade, for or to serve as inflatable sectional or divisional ribs or rods or raised hollow seams and/or supports of its upper structure or as the framework and covering of the upper structure itself, and for the upright extension of the handle and the handle itself, instead of, or partly instead of, the steel, metallic or wooden framework and handle ordinarily used; and so that an umbrella, parasol or sunshade so constructed may be inflated or deflated according to whether it is to be used or not, and as and when required, by means of fitted inlet and outlet valves and/or an air-inlet and outlet or outlets and an air pump or air inflator; and the invention also consists of the principle of so introducing or embodying (and as further described below) strips or pieces of unvulcanized rubber or other india-rubber of great elasticity or resilient properties as a means of removing or lessening the risk of an umbrella, parasol or sunshade being blown inside out; and the invention further consists of the principle of introducing or embodying in the making of any kind of umbrella or in the making of an umbrella the ribs, rods and/or framework of which are wholly or principally of inflatable india-rubber, the use of thin rubber or oil-silk or oil-skin or any other transparent or semi-transparent material as a covering medium, and the joining, fastening or fitting of it to each sectional or divisional rib or raised seam like ridge and/or its support and/or the central air-receptacle, and so that by the ribs' or seams' upward and downward or outward and inward movements or tendencies on inflation or deflation, the unfolding and folding of the covering medium adapted is actuated in a manner or an appearance not unlike that of a silk cover of an ordinary steel framed umbrella; and the invention also consists of physical methods adapted to produce the idea which may be indicated or enumerated below.

Embodiments of the invention may be as follow:—

(1). An inflatable air-receptacle which is also a central air conduit for a number of inflatable india-rubber tubes or pipes or air conduits (or tubes, pipes or conduits made from processed fabric or other material than rubber, which is serviceable as a receptacle or container or conduit for air) which are fastened to it by a process of vulcanization or otherwise and which lead or radiate from it to form a foundation for a covering the shape of

(or in part the shape of) a hexagon or octagon or other regular polygon, or for a covering or sectional covering with any equal angular divisions. The inflatable tubes or pipes or conduits are so fashioned and/or made and/or joined or fastened to the centrally supported air-receptacle or its understructure or superstructure and/or any other connections or supports, that, when inflated, they take a similar or somewhat similar downward curve or arc shape to that of the steel ribs or rods of the upper structure of an ordinary silk covered umbrella—i.e. the shape of circumscribed arcs of an equal degree; and a straight inflatable rubber tube or pipe or air-conduit which is fastened or fitted by screw and threaded core connection into, or otherwise joined to, the lower part of the central inflatable air-receptacle and so that it will serve the same purpose and be in the same relative position to the upper structure consisting of air-container and inflatable tubes or pipes or conduits as the wooden handle part and its metallic extension does and is to the steel framework of ribs and rods in an ordinary kind of silk covered umbrella; and the fitting of an inlet valve and/or an air inlet and an air-outlet or outlets in or to the straight tube, and the attachment thereto, at its end or near to its end, of an air pump or air inflator. (Hereinafter, the central inflatable air-receptacle or receptacles and the inflatable downward curved or arc shaped tubes or pipes or conduits, and the straight inflatable pipe or tube with its valve and air-inlet and air outlet or outlets and inflator or air-pump, may all be termed the "rubber framework".)

(2). Alternatively and/or additionally the upper structure of an umbrella, parasol or sunshade may consist of strong inflated (but not inflatable) ribs or rods or ribs or rods of solid, soft or otherwise pliant india-rubber or gutta percha (with india-rubber or other material as the sectional fillings in the form of those of an ordinary cover) so connected to the central air receptacle or its understructure and the upright inflatable tube and its cross sections, and to a larger inflatable understructure and/or a series of inflatable cross-piece supports, that, by the inflation of the larger understructure and/or cross supports, the upper structure takes the shape of the covering or head part of an ordinary steel framed umbrella. Its means of inflation and deflation would be as elsewhere herein described.

(3). Alternatively and/or additionally, the fitting, joining, fastening or attaching in the manner of seams or otherwise, and by a process of vulcanization or

otherwise, of shaped pieces or sections or strips of thin rubber, oil-silk, or oil-skin or any transparent or semi-transparent material, or silk, cotton or other fabric, 5 according to whether the cover is intended for an umbrella or sunshade, by and at or along each of their sides (which is also lengthwise) to the air tubes, pipes or air-conduits or their understructures or super- 10 structures, and by and at their radial ends or narrowest widths to the air-container or containers or to any under-structure or superstructure of rubber or other material which it may have or 15 they may have; and so that, in their finished state or appearance they, when extended, on and by the inflation of their controlling ribs or rods or seams (the tubes, pipes or conduits) or their 20 controlling larger understructure, are not unlike the pieces of silk or cloth in an ordinary umbrella or sunshade.

(4). Alternatively and/or additionally the attachment or fitting or fastening or 25 joining of short strips or lengths or tubes (as air conduits or not) of unvulcanized rubber or other india-rubber with strong elastic and resilient properties as cross pieces connecting the inflatable vertically 30 fitted straight tube or pipe with some or all of the downward curved or arc shaped inflatable tubes, pipes or conduits at or by their nearest sides, although not at the point or points of their closest 35 proximity; and the attachment, fitting or fastening of a strip or length of unvulcanized rubber to the radiating or outer ends of the tubes, pipes or conduits or its insertion thereat within a seam 40 connecting each of the ends of the several strips or sections of thin india-rubber, oil-silk or other material used for the covering of the upper structure or seams which so continue from the one sectional 45 filling or cover to the other; and so that, in the former and latter instances in (4) above of the use of strips of rubber of this kind, their fitting, fastening or inserting may so additionally strengthen 50 the framework and increase the effective resistance to or safeguard from the wind, or from sudden or other cross-winds.

(5). Alternatively and/or additionally there may be fixed at the radiating or 55 outer ends of each tube, pipe or conduit, and so connecting them, means for improving the balance or increasing the weight of the upper structure.

(6). Alternatively and/or additionally 60 the "rubber framework" may be partly

made of, or strengthened by, metal or wood or of or by some composite material, or its handle and upright extension to the central air-container and tubes, pipes or conduits, may be made of wood or 65 thin metal or of a composite material and be hollow to serve as an inflator and, in its upper part, an air-conduit and receptacle for the detached upper struc- 70 ture in a collapsed state and when not in use; and a "rubber framework" or a framework partly made from rubber as described above or herein may be fitted or fastened together, in addition to means 75 by vulcanization and adhesion by gum or other sticking substance, by screw and threaded core connection, rivetted joints, press studs, clips and hooks and eyelets or otherwise.

(7). Alternatively and/or additionally 80 means or a device for strengthening the sides or increasing the rigidity of the straight and vertical tube, which may be attached to the lower part of the handle or the handle's extension and which 85 consists of a strip of thin metal of a spring like nature, on each of two sides of the vertical pipe, with or without a ratchet; and which can be extended to 90 fasten at the pipe's top or upper section, and, when not in use, be re-wound or released to wind itself, within a small container or two of them and consisting of a spring device for re-winding.

(8). Alternatively and/or additionally 95 the use of any fabric or material which may have undergone a process of proofing or any unprocessed fabric or material which may be used for the conducting or 100 flowing of air, may be used in the place of or with any inflatable india-rubber tubes, pipes, air-conduits, tubing or piping, receptacles or containers or their 105 understructures or superstructures mentioned above, and any mention herein of an india-rubber air receptacle of any kind is to be understood as applying 110 equally to air receptacles of fabric or like collapsible or deflatable material.

(9). The making of a container for a 115 deflated umbrella, parasol or sunshade, in water proof material or otherwise, but so that any metallic parts may press as little as possible, or not at all upon the tubes or thin rubber, and so that the straight pipe section may also be used as a means of holding or carrying.

Dated the Twenty-fourth day of June, 1937.

WILLIAM BARCROFT.

COMPLETE SPECIFICATION

Improvements in and relating to Umbrellas, Parasols and the like

I, WILLIAM BARGROFT, of "Southolme," Dunham Massey, Cheshire, a subject of the King of Great Britain and Ireland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to umbrellas, parasols and like or other personal sunshades and has for its object their making in inflatable material or in fabric so adapted, with means of or for inflation and deflation, to ensure compactness when not in use. A further object is so to produce umbrellas, parasols and the like that they will not easily be blown inside out, and be less subject to wear or damage by the dispensation of metallic or other rigid ribs and stretchers. Further objects are thus providing better protection from continuous and heavy rainfall with less inconvenience after use and when in a wet state, a reducing of weight and lessening of cost of construction and repair, and simple and improved means of or for facilitating the processes of inflation and deflation.

The present invention is the application to umbrellas, parasols and the like of a constructional principle consisting of the use of rubber or rubberized fabric (or other finely woven fabric or material through which air will not pass) to form parts thereof which are air conduits or air receptacles inflatable through a single air inlet passage and from the lungs to give shape and rigidity to those and all other dependent parts (which may or may not be inflatable) of inflatable umbrellas, parasols and like sunshades without embodiment therein of a non-return inlet valve or nozzle and the requirement of an air pump or air inflator to facilitate inflation; and the present invention also consists of means for somewhat similarly obtaining shape and rigidity by inflation but by embodiment of a non-return valve fixed in or near the handle portion of the larger end of an inflatable or uninflatable upright support for the inflatable cover, and an air pump or inflator fixed or fitted at said lower end of upright support and thereat connected with said inlet valve for functional purposes.

Embodiments of the invention are, by way of example, illustrated on the sheet of drawings hereunto appended and wherein:—

Fig. 1 is a diagram of an umbrella or

sunshade cover with an inflatable under-structure and uninflatable ribs:

Fig. 2 is a diagram of an umbrella or sunshade cover with inflatable ribs:

Fig. 3 is a detailed perspective view of inflatable ribs, as in Figure 2:

Fig. 4 is a sectional view of lower end of handle portion of upright support showing positions of air outlet, inlet valve and air pump:

Fig. 5 is a sectional view of an air inlet passage in an upright support which is inflatable or filled with air from the lungs:

Fig. 6 is a perspective view of an inflatable umbrella or sunshade showing positions of strips of rubber of strong elasticity for protection of cover in gale.

The part in Figure 1 referenced *a* is an inflatable under-structure which, when inflated, gives rigidity or extended form or shape to the pliable but not inflatable ribs *b* of a cover of an umbrella or sunshade of which said under-structure is a functional part. Said ribs (*b*) are joined at their outer extremities by a selvedge or strengthening border *c* of a part *d* of cover which is not inflatable. But the ribs *a1* shown in Figure 2 are rubber tubes and when inflated provide shape to the cover, and their ends *a2* are either flattened or (as illustrated in Figure 3) rounded and sealed. Fillings or sections of fabric or rubber or other material (*d*) which form the cover are fastened to the tubes by cement or adhesive material or otherwise joined in the manner shown. In Figure 4, the handle portion *e* of an upright support *f* for the inflatable cover is shown, and that part of the lower end of said upright support which contains an air outlet *f1*. The position of an air pump or inflator (which forms a part of the handle of said upright support) is secured by screw connection on to inlet valve *g*; and the spring clip *h* and button *i* hold the handle part of said air pump in fixed position when plunger is not in use. An upright support *k* which is inflatable from the lungs and through its open end or mouth-piece is shown in Figure 5 with a stopper or plug or cap *l* for closure of air passage, and a holding means *m* for said closure device to upright support when not in functional position, consisting of a short length of cord, wire or chain. The view in Figure 6 is of an inflatable umbrella or sunshade of a kind which obtains its shape from tubular ribs connected with an inflatable or uninflatable

but tubular upright support either by air flow from pump (as in *f*) or from the lungs (as in *h*), and has a rubber tip *n* whose upper part is solid and whose lower part receives the threaded end of an upright support of a detachable kind to ensure air flow to the inflatable parts of a cover also connected with said tip. Strips of rubber of great elasticity *o* are fastened as cross-pieces to inflatable ribs *al* (or to uninflatable ribs *a* as in Figure 1) and to a runner ring or fixed ring *p* on upright support *f* or *h* to prevent cover being turned inside out in gale.

The use of umbrellas, parasols and like sunshades which are inflatable either by air inlet or a non-return inlet valve fixed in the handle thereof is facilitated by the embodiment of an upright support which is of short length; and this feature makes possible, on the expulsion of air, the achievement of compactness when not in use by folding, which is the main advantage of a collapsible unit or units in umbrellas and sunshades.

I am aware that inflatable umbrellas, parasols and like sunshades have been proposed employing inlet non-return valves in their inflatable covers, and with an air inflator or pump attached to or fitted in the handle of an upright support for the purpose of inflation of an inflatable cover otherwise than by inlet valve or air inlet in said handle or upright support, but I do not claim these features.

The preferred embodiments of the invention which are specifically described

herein and illustrated in the accompanying sheet of drawings do not so limit the application of the invention which may be otherwise embodied within the meaning or scope of the following claims.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. An umbrella, parasol or other sunshade the shape and utility of which is dependent upon inflation of its cover or inflation of its cover and upright support through a mouth-piece or any other simple form of air passage the closure of which is effected by plug or other simple means.

2. An inflatable umbrella, parasol or other sunshade with air-outlet in the lower or holding end of its inflatable or tubular upright support, an air pump or inflator functionally fixed at or fitted to extremity of said upright support at said lower or holding end, and a non-return inlet valve fixed in said upright support between positions of said air outlet and said air pump and so that said air pump may be functionally and otherwise connected therewith, for the purpose set forth.

3. Inflatable umbrellas, parasols and other sunshades, substantially as described and illustrated in the accompanying drawings, and for the purposes set forth.

Dated the twenty-eighth day of June, 1938.

WILLIAM BARCROFT.

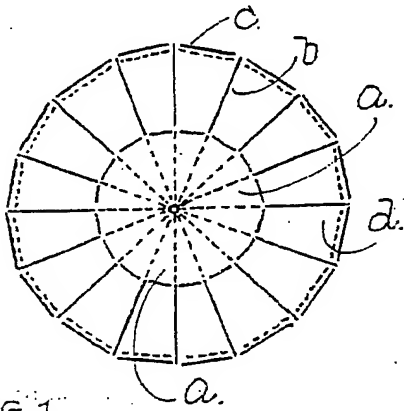


FIG. 1.

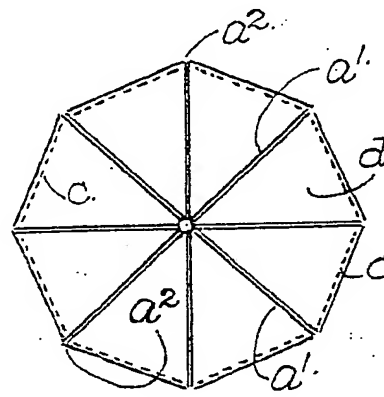


FIG. 2.

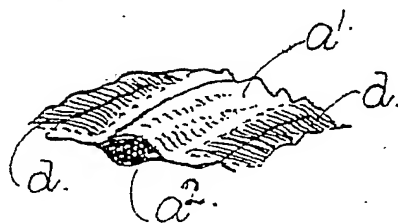


FIG. 3.

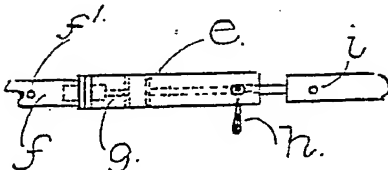


FIG. 4.

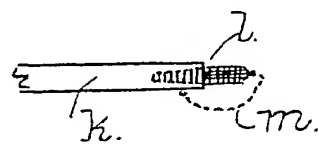


FIG. 5.

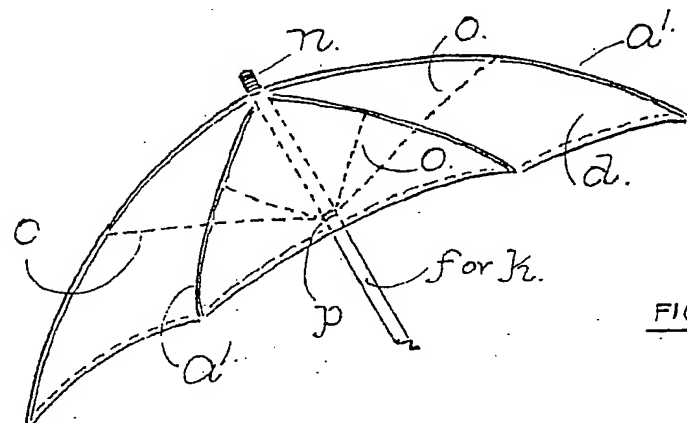


FIG. 6.

[This Drawing is a reproduction of the Original on a reduced scale.]